MODULE 3

COASTAL AREA MANAGEMENT AND THE NEED FOR AN INTEGRATED APPROACH

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OBJECTIVES:

- To provide an understanding of ICAM and its principles
- To offer a framework and guidelines for Integrated Coastal Area Management

OVERVIEW:

- Gives broad definition of ICAM
- Outlines principles of ICAM- Precautionary, Polluter Pays, Resource Accounting, Trans-boundary Responsibility and Inter-generational Equity
- Presents guidelines to effective implementation of ICAM Principles
- Outlines typology of coastal zone management and environmental issues relevant to ICAM

INTEGRATED COASTAL AREA MANAGEMENT (ICAM) DEFINED

Integrated Coastal Area Management (ICAM) has been defined by the World Bank as "... a governmental process consisting of the legal institutional framework necessary to ensure that development and management plans for coastal zones are integrated with environmental (including social) goals and are made with the participation of those affected.

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ICAM has also been described as:

"... a comprehensive, multi-sectoral, integrated approach to the planning and management of coastal areas. This encompasses the process of assessment, planning, and management for the sustainable development, multiple use and conservation of coastal areas, resources and ecosystems. It is a process that must be tailored to fit into the institutional and organisational environments of the countries involved, including political and administrative structures, cultural patterns and social traditions (Scura, et al., 1992). With the... diversity of environmental, social, cultural and economic conditions the ICAM process will, by necessity, differ from island to island." (SPREP, 1993).

ICAM is "... a dynamic process in which a coordinated strategy is developed and implemented for the allocation of environmental, socio-cultural, and institutional resources to achieve the conservation and sustainable use of the coastal zone." (McLean and Mumura, 1993).

ICAM involves management of the resource base for sustainable development; management of the resource base for coastal tourism; management of the coastal ecosystem; and management of the ecosystem through partnerships. The principle of ICAM is that it should take the form of a multi-disciplinary and inter-disciplinary approach, it should be area/country specific and should be good business. Education, incentives and enforcement are all important aspects to ICAM.

PRINCIPLES OF ICAM

- Precautionary Principle
- Polluter Pays Principle
- Use of proper resources accounting
- Principle of trans-boundary responsibility
- Principle of inter-generational equity

Activities of integrated coastal area management require data and information, international and regional cooperation, which should all be management related.

Means of Implementation

Effective implementation of ICAM requires sound knowledge of science and technology particularly relating to the, structure and functions of ecosystems, and their interactions, as well as uses of and needs in the coastal area. These must be accompanied by human resources development in the form of adequately trained personnel, such as, enforcement personnel, educational officers, tour guides and scientists. Long term capacity building should also be encouraged which should include upgrading and maintaining staff capabilities and resource materials. All of these require adequate financing which should be sought from the public sector, private sector, institutional bodies, non-governmental organizations and other relevant stakeholders. In summary key areas for the implementation of ICAM are:

- Science and Technology
- Human Resource Development
- Capacity Building
- Financing

KEY STEPS IN ICAM

The main steps in ICAM are, firstly, agreement on the problem being faced and the goals to be achieved in the application of ICAM principles and programmes. Secondly, to acquire necessary information - biological, chemical, physical, socio-economic, legal and institutional, and to analyze the information in order to properly assess the current status of an area, the needs for the area, the demands being placed on the resources and how the information can best be used. An action plan should be generated and the necessity for modification of inadequate management practices should be accepted as appropraite. Organizing and achieving interagency cooperation can be time consuming and may seem to be futile, but this is important for involvement of stakeholders at all levels.

Incentives and Alternatives

Incentives for integrated coastal area management can be brought about by control of coastal resources by communities, offers of technical and financial assistance as well as tax and other financial incentives. Development of alternatives should also be considered as adjunct to restricting resource use.

FRAMEWORK OF INTEGRATED COASTAL AREA MANAGEMENT

Integrated Coastal Area Management requires a framework on which key actions, priorities and solutions can be linked. A management strategy should include provisions for several different activities as outlined below:

- Identification and assessment of problems.
- Setting management objectives for priority problems.
- Identification, evaluation and selection of strategies and measures,
- including management approaches.
- Criteria for evaluating the effectiveness of strategies and programmes.
- Programme support elements.

Coastal Management can be divided into three main types which are based on several factors including, ecological processes, institutional capacities and levels of planning and regulation. These are summarized in Table 1. Table 2 provides a selection of environmental issues which are relevant to ICAM in the Wider Caribbean region and associated criteria referring to management of issues.

Module 3 - Table 1:
A Typology of Coastal Management

Enhanced Sectoral Management	Coastal Zone Management	Integrated Coastal Management
Focus on a single sector or topic but explicitly addresses impacts and interdependencies with other sectors, ecosystem processes and institutional capacity.	Multi-sectoral planning and regulation focused upon the characteristics and management issues within narrow, geographically delineated stretches of coastline.	Expands the cross sectoral feature of coastal zone management to consideration of the closely coupled ecosystem processes within coastal watersheds and oceans.

Module 3 - Table 2:

Selection of Environmental Issues Relevant to
Integrated Coastal Area Management in the Caribbean

	CRITERIA			
ISSUE	National Scale	Multiple Scale	Trans-boundary Impact	Data Availability
Sewage Treatment and Disposal				
Solid Waste Disposal				
Storm Water Discharge				
Resource Assessment				
Beach Loss				
Deforestation				
Destruction of Wetlands				
Water Supply				
Development Control				
Heavy Metal Pollution				
Oil Pollution				
Introduction of Foreign Species				
Depletion of Ground Water				
Coastal Erosion				
Climate Change				
Loss of Biodiversity				
Sand Loss				
Over-fishing				
Natural and Man-Made Hazards				
Transportation Needs				
Water Sports				
Public Awareness and Education				
Carrying Capacity				
Agency Collaboration				

CAPACITY BUILDING

The need for coastal zone planning and management has become critical in the past decade, and many countries have been putting plans in place to achieve this. Following the1992 Earth Summit in Rio de Janeiro, Brazil, guidelines were established in Agenda 21 - a comprehensive global environmental strategy - for capacity building in coastal zone management for individuals and institutions:

"Coastal states should promote and facilitate the organization of education and training in integrated coastal and marine management..."

"International organizations... should support (the capacity-building efforts of) coastal states,... devoting special attention to developing countries"

Capacity building at these levels must emphasize the knowledge and skills required by effective practice of coastal management of which planning is an important component.

COASTAL ZONE MANAGEMENT

> The coastal zone planner must be sufficiently equipped to bring about changes in societal values and behaviour complementary to existing environmental laws, regulation and plans.

To effectively manage coastal ecosystems, managers and planners must be equipped with the necessary combination of knowledge, skills, and attitudes. This includes knowledge of strategic analysis and the policy process, knowledge of how ecosystems function, as well as an understanding and appreciation of the socio-cultural realities of the respective area. The coastal zone planner must be sufficiently equipped to bring about changes in societal values and behaviour complementary to existing environmental laws, regulations, and plans.

Many plans, while technically sound cannot be translated into meaningful action. Very few of them are successfully implemented as the people affected cannot support the actions proposed. Consequently, the symptoms of unsustainale use of our coastal resources continue to threaten the viability of tourism and other activities in the region.

The concepts underlying coastal resource management goals, strategies and plans must therefore lead to a workable balance between user groups in a given place and the ecosystems with which they interface. Two concepts are central to this process:

Systems thinking in the management of ecosystems

- understanding of the processes that drive ecosystems and the inter-relatedness of each part

Adaptive management

- managers and planners must view their work as a series of progression through the learning cycle where they will discover what is feasible in a given area and what strategies are best to achieve more sustainable forms of development.

The ICAM manager/planner must adopt both approaches, but more critically, must address the development issues and new approaches to governance at the community level. The task takes on greater proportion for the Wider Caribbean region where the majority of people depend on the coastal resources for a living, and where poverty abounds. The balance between the sustainable use of resources and survival is not easy to achieve.

Coastal zone managers and planners need to integrate the concepts from various disciplines such as natural science, economics, law, and anthropology into resource management strategies that will make a difference.

They must be specially educated in the art and science of integrated thinking, and the programmes designed should be shaped to impart the skills, knowledge, and attitudes required to effect change in ecosystem management.

The knowledge and skills of an ICAM manager fall into three broad categories (Olsen, 1995) as outlined below.

SKILLS IN STRATEGIC ANALYSIS AND THE POLICY PROCESS

To achieve positive response from an integrated scheme, management personnel must have the ability to "articulate a vision and inspire the collaboration required to achieve the programme's objectives". Training programmes for coastal managers should therefore, "cultvate the skills required of an effective agent of societal change".

Strategic analysis is important in bringing about behaviour modifications in the use of coastal resources, in particular, resource exploitation and the allocation of benefits. The task is however, challenging given the complexities in the institutional arrangements governing the management of coastal ecosystem. A solid foundation is required in the skills and knowledge required for:

- Conflict resolution
- Managing group processes
- Administration of complex institutions and programmes
- Design and administration of trans-disciplinary research programmes
- Design and administration of public education and public participation programmes
- Programme evaluation"

These special skills including the ability to synthesize, interpret, and present complex sets of information. They are passed on from one generation to the next, and should form an important component of any training programme. Oslen outlines steps in the evaluation of each generation of a Coastal Zone Management Programme.

KNOWLEDGE OF HOW ECOSYSTEMS FUNCTION

ICAM planners and managers must be equipped with the kind of technical knowledge required to transcend the boundaries of a particular science. Such persons must be able view the process that governs the functioning of ecosystem and its response to anthropogenic and natural changes in a wider perspective.

The inability to understand the interconnections and interdependencies between the coastal sea, estuaries, and their watersheds is a serious set back in the region's attempts at ecosystem management. Technical knowledge required to assess the implications of scientific uncertainties is also important in ecosystem management. Ludwing, Hilborn and Walters (1993) offer the following principles for effective ecosystem management:

"Act before scientific consensus is achieved."

"Rely on scientists to recognize problems, but not solve them."

"Confront uncertainty. Once we free ourselves from the illusion that science or technology (lavishly funded) can provide a solution to resource or conservation problems, appropriate action becomes possible."

The human element is an important component of coastal ecosystem functions, and must be integrated in planning for the development of coastal zones. Ecological economics brings together ecology and human societies (how they function and their economic systems). The coastal zone manager must understand the principles of ecological economics against the background of the free market paradigms and the valuation of ecological resources.

Training programmes for ICAM managers should draw from the following disciplines, among others:

- Systems ecology
- Resource economics
- Environmental engineering
- Landscape planning

CULTURAL LITERACY

The problems that confront coastal managers are not only technical issues requiring technical solutions. Socio-cultural factors generate many problems which the coastal zone manager cannot ignore. Many of these stem from the delicate balance that exists between resource exploitation and the sustainable use of resources-a trade off between short and long term gains.

Tradition and culture play an important role in how societies use and value resources. The coastal zone manager cannot be an effective practitioner unless he is "culturally literate".

Cultural literacy involves the ability to understand the traditions, values, attitudes and world view of a people, and the ability to function within a culture. Behavioural changes can only be effected if cultural knowledge is incorporated into the design and administration of coastal zone management programmes.